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The State of the Commonwealth Index:

Kentucky Makes Steady Quality-of-Life Progress

By Amy L. Watts

Something about the human condition compels us to compare and rank nearly every facet of our lives. Wines, consumer electronics, and recruiting classes, which are evaluated regularly and ranked according to their quality and value, quickly come to mind. Likewise, states are ranked in numerous ways according to demographic, economic, educational, and social characteristics. Such comparisons enable us to track progress over time and determine where we stand relative to other states. States, however, are multidimensional, making it difficult to derive a composite or overall ranking. For example, relative to other states, Kentucky has a low crime rate, a high home ownership rate, low per capita income, and high toxic air emissions. We know where Kentucky ranks on these individual factors, but how does it look overall?

We have developed an approach that combines 32 different factors into a single quality-of-life index. The State of the Commonwealth Index is a single number that summarizes Kentucky's overall quality of life relative to other states over time. Based on 1990 to 2003 data from national surveys and studies of various indicators of well-being in the states, the State of the Commonwealth Index includes factors ranging from teen pregnancy, poverty, and voter participation rates to toxic releases to air, water, and land. Together, they form a data-driven index that offers a richer understanding of how we are faring now and how our status has changed relative to other states.

Based on our index, Kentucky made slow but steady progress between 1990 and 2003. Our national ranking improved from the mid 40s to the low 40s while our regional ranking remained about the same. In the sections that follow, we describe how the index was created, which indicators are used, and how Kentucky's rank has changed relative to the nation and its peer states.

How the Index was Created

The State of the Commonwealth Index combines 32 long-term quality-of-life indicators covering 1990 to 2003,[1] including measures of community attributes, education, the economy, the environment, and government (see Table 1).[2] The index uses summary statistical information about each indicator to construct a number ranging from 0 to 1000 that expresses how each state's measure compares to other states. The higher the score, the better a state ranks among the states.[3] The final index score is the average of five subindex scores based on the quality of life areas measured by the indicators. They include the subindexes of communities, education, the economy, the environment, and government, ranging from 0 to 200 based on the equal weights given to each area. In addition to comparing Kentucky to all the states, a second index was created comparing Kentucky to its peer states.[4] This group of states includes those demographically, geographically, and economically similar in makeup to Kentucky; 17 states are included in the estimation of this second index.[5]

Although it is a comprehensive, data-driven index, caveats and complicating factors that could potentially affect the outcome of its values include choice of the weighting scheme, the quantity and types of indicators included, and the inherent quantitative bias of the method. The framework used to construct the index reflects findings from 15 public forums held throughout Kentucky and a statewide conference in 1994 in which over 500 people participated. From these meetings, a vision statement of Kentucky's future emerged which highlighted the five main themes used here to construct the subindexes. The weighting scheme reflects the values and priorities highlighted during these meetings.[6] In addition, while there are countless quality-of-life indicators available, the indicators chosen reflect the same values Kentuckians expressed in their vision of the state's future. It is also important to note that, arguably, many facets define quality of life which do not easily lend themselves to quantification, inherently biasing any index of this kind towards those that can be quantified. In light of these caveats, however, the final form and methodology used here is reasonable, given our approach, which aims to retain the values and ideals generally held by many Kentuckians from around the state.

Changing Times Call for Changing Indicators

As a result of feedback we received since the initial release of the State of the Commonwealth Index in 2004, we have removed two indicators and added eight. Our rationale for these changes is grounded in recent trends. Obesity, for example, has been identified as a major risk factor for a number of ailments, increasing its importance in the health status of a state's population. A measure of educational achievement by minorities was added in recognition of its prominence in the federal No Child Left Behind Act, which is becoming an integral measure of advancement. Previously, the index had no indicator for the arts, which has been positively linked to other areas of educational achievement as well as economic development; thus, an arts indicator was added to lend greater balance to the Index. Because research has shown a positive relationship between high-speed Internet use and economic growth

TABLE 1
The 32 Long-Term Quality-of-Life Indicators Used in the State of the Commonwealth Index

Name	Description
Communities	
1. Crime Index	number of serious crimes reported to law enforcement per 100,000 persons
2. Employment Rate for Persons with Disabilities	percent of noninstitutionalized civilians with disabilities aged 25 through 61 who are employed
3. Homeownership Rate	percent of the total number of occupied households that are owner-occupied
4. Health Insurance Rate	percent of all people covered by private or government health insurance
5. Teen Birth Rate	number of births to girls aged 15 to 17 years old per 1,000 girls aged 15 to 17 years old
6. Smoking Rate	percent of the population aged 18 and older who smoke
7. Obesity	percent of people 18 and older with a body mass index of 30 or more
8. Charitable Contributions	average annual contributions deductions per total number of tax returns filed
Education	
9. High School Attainment Rate	percent of adults 25 to 64 years old with at least a high school diploma or equivalent
10. College Attainment Rate	percent of adults 25 to 64 years old with at least a four-year college degree
11. ACT Average Composite Score	state-level average composite ACT scores
12. 8th Grade NAEP Math Results	percent of 8th graders who scored at or above basic level on the National Assessment of Educational Progress (NAEP) Math Exam
13. Educational Achievement Gap	the ratio of average scale scores of non-Hispanic white students to nonwhite and Hispanic students on the 8th grade NAEP Math Exam
14. Arts Occupations	percent of adults 16 years old and older in occupations relating to the arts, design, and entertainment
Economy	
15. Per Capita Income	per capita personal income
16. Poverty Rate	percent of people living below the federal poverty level
17. Per Capita Gross State Product	per capita gross state product
18. Entrepreneurial Depth	the average self-employed income per self-employed worker
19. U.S. Patents	average annual number of U.S. patents issued per 10,000 business establishments
20. Transportation Index	an index combining seven criteria of performance of state highway systems
21. Home Computer Access	percent of people with access to a computer in their home
22. Internet Access	percent of people with access to the Internet anywhere
23. Home Broadband Access (2000 to 2003 only)	percent of households with access to broadband in their home
Environment	
24. Toxic Air Emissions	total pounds of toxic air emissions per 100 population
25. Toxic Surface Water Discharges	total pounds of toxic surface water discharges per 100 population
26. Toxic Releases to Land	total pounds of toxic releases to land per 100 population
27. Air Quality	percent of people who live in counties that meet standards for air pollutants
28. Water Quality	percent of people served by community water systems with no health-based violations
29. Motor Fuel Use	per capita gallons of motor fuel consumed
Government	
30. State and Local Government Efficiency	number of state residents served per 100 state and local government employees, excluding education employees
31. Women in State Legislature	percent of total state legislature offices held by women
32. Voter Participation Rates	percent of the *eligible* voting-age population that voted in the most recent presidential election

Note: The final index is weighted so that each of the five thematic categories (communities, education, economy, environment, and government) are equally weighted (i.e. 20 percent each).

and development, we added an indicator on broadband access. A more comprehensive indicator, entrepreneurial capacity, has replaced our previous measure of business formation. A measure of road conditions has been added in recognition of the integral role that a state's transportation system plays in the development of its economy. Also, in light of recent developments concerning the availability of oil and natural gas, a measure of motor fuel use was included to account for the stewardship of this valuable natural resource. Finally, we now use a more refined measure of voting rates that excludes ineligible noncitizens and felons from the final calculation.

Slow But Steady Progress

Kentucky made slow but steady progress from 1990 to 2003. Figure 1 shows Kentucky's rank in the State of the Commonwealth Index from 1990 to 2003, both nationally and relative to its peer states.[7] In the national ranking, Kentucky progressed from ranking in the mid 40s (1990-1994), to the low to mid 40s (1995-1997), to the low 40s (1998-2002). Kentucky's rank did decline in 2003, but at this point we cannot determine whether this is a temporary aberration or the beginning of a trend. Kentucky's ranking relative to its peer states has remained fairly constant during this period.

On the State of the Commonwealth Index, Kentucky gained ground in the areas of education, the economy, and the environment, held steady in the area of communities, and lost ground in the area of government between 1990 and 2003 both nationally and among its peer states (see Table 2). Kentucky also improved its standing nationally and among its peer states in many of the 32 long-term quality-of-life indicators. The state made progress on 16 of the indicators nationally and relative to the comparison states. On the remaining indicators, Kentucky held steady on 4 indicators and lost ground on 12 nationally, and on 3 and 13, respectively, compared to its peer states.

Improvements in the areas of education, economy, and the environment account for all of the growth that Kentucky experienced from 1990 to 2003, with 13 indicators increasing in rank nationally in these three areas and 14 relative to Kentucky's peers. In 1990, Kentucky placed 44th out of the 50 states and 12th out of the peer states based on a ranking of the education subindex scores

TABLE 2
Kentucky Ranked by Subindex Scores and Indicator Index Scores for 2003 and 1990 and the Directional Net Change in Rank, 1990-2003

	National Index			Peer State Index		
Subindex or Indicator Name	**2003 Rank**	**1990 Rank**	**1990-2003 Change in Rank**	**2003 Rank**	**1990 Rank**	**1990-2003 Change in Rank**
Communities	39	39	0	11	10	-1
1. Crime Index	11	4	-7	2	2	0
2. Employment Rate for Persons with Disabilities	47	40	-7	14	9	-5
3. Homeownership Rate	8	31	+23	6	13	+7
4. Health Insurance Rate	25	26	+1	7	6	-1
5. Teen Birth Rate	36	36	0	9	8	-1
6. Smoking Rate	50	49	-1	17	16	-1
7. Obesity	46	36	-10	14	8	-6
8. Charitable Contributions	37	32	-5	14	13	-1
Education	41	44	+3	9	12	+3
9. High School Attainment Rate	35	47	+12	9	14	+5
10. College Attainment Rate	43	45	+2	14	12	-2
11. ACT Average Composite Score	40	43	+3	10	11	+1
12. Grade 8 NAEP Math Results	35	43	+8	9	12	+3
13. Educational Achievement Gap	17	4	-13	3	1	-2
14. Arts Occupations	45	45	0	14	15	+1
Economy	43	47	+4	12	14	+2
15. Per Capita Income	40	44	+4	11	13	+2
16. Poverty Rate	41	44	+3	11	12	+1
17. Per Capita Gross State Product	40	41	+1	11	13	+2
18. Entrepreneurial Depth	28	25	-3	8	8	0
19. U.S. Patents	37	40	+3	12	15	+3
20. Transportation Index	35	44	+9	10	14	+4
21. Home Computer Access	38	45	+7	10	12	+2
22. Internet Access	34	46	+12	8	13	+5
23. Home Broadband Access*	44	11	-33	14	1	-13
Environment	37	46	+9	8	10	+2
24. Toxic Air Emissions	42	38	-4	9	8	-1
25. Toxic Surface Water Discharges	32	32	0	6	8	+2
26. Toxic Releases to Land	41	15	-26	11	1	-10
27. Air Quality	15	18	+3	3	7	+4
28. Water Quality	15	46	+31	5	16	+11
29. Motor Fuel Use	39	39	0	13	13	0
Government	41	34	-7	14	10	-4
30. State and Local Government Efficiency	15	6	-9	5	3	-2
31. Women in State Legislatures	48	47	-1	15	14	-1
32. Voter Participation Rate	35	42	+7	8	11	+3

Note: The indicator ranks are based on the index scores for each indicator used to calculate the final index score. An increase in rank, such as from 10th to 1st, signifies a positive increase in performance for that indicator regardless of what indicator it is. The last place ranking in smoking rate for Kentucky signifies that it has the highest adult smoking rate in the country, not the lowest. The index adjusts for the inverted nature of the original value so that it may be compared to and combined with the other indicators in a meaningful way.
*This change occurred between 2000 and 2003.

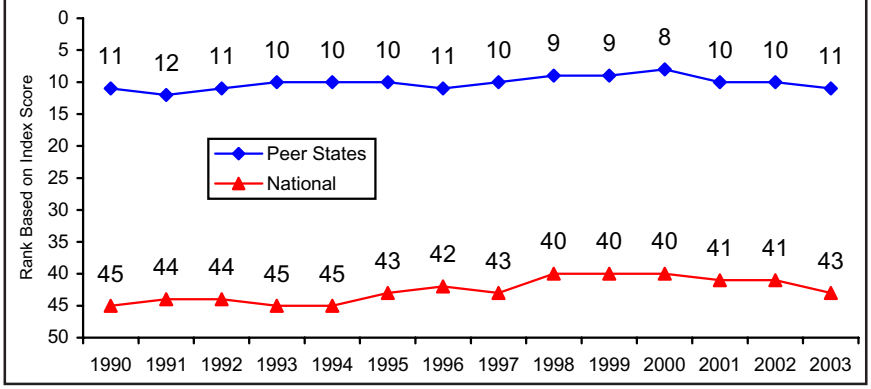
(see Table 2). By 2003, Kentucky's education subindex had advanced three places in rank to 41st in the nation and three places to 9th among the peer states in 2003. A ranking of the states based on the indicator index scores shows that Kentucky's ranking remained unchanged or improved on each one, with the exception of college attainment rates relative to Kentucky's peer states and the educational achievement gap relative to both the nation and Kentucky's peers. Kentucky's high school attainment rates improved the most from 1990 to 2003, increasing from 47th in the nation in 1990 to 35th by 2003 and from 14th to 9th among its peers. The percent of Kentucky adults 25 to 64 years old with at least a high school diploma increased from 77 percent in 1990 to 86 percent in 2003. Kentucky improved its National Assessment of Educational Progress (NAEP) Eighth-Grade Math Exam scores, moving from 43rd nationally in 1990 to 35th in 2003 on this indicator index. The percentage of Kentucky eighth-grade students scoring at or

above the basic level on the NAEP Math Exam increased from 43 percent in 1990 to 65 percent in 2003.

Conclusion

While the overall trend for Kentucky between 1990 and 2003 was one of slow but steady progress, the state remains well below average nationally. Improvements in education helped boost Kentucky's ranking and kept it on its chosen path of slow but steady progress. Sustaining this commitment to high-quality, accessible education at all levels is key to achieving the goals that the architects of educational reform envisioned. To accelerate the state's rate of progress, targeted investment and creative uses of the resources we have will be needed to leapfrog ahead of other states and create and sustain an enviable quality of life across the Commonwealth.

FIGURE 1
Kentucky Ranked by Index Score Relative to the US and Peer States, 1990 to 2003



Notes

[1] 2003 is the last year for which we have data for all the indicators and all the states.

[2] For further information on the indicators and their sources please see <http://www.kltprc.net/stateofthecommonwealthappendix.htm>.

[3] The indicators were standardized to facilitate their comparison with each other and their combination into one summary statistic. By transforming all outcomes to Z-scores, with the same mean (0) and standard deviation (1), all of the indicators could be compared and combined using a common yardstick. Although the use of standardized outcome measures provides a common yardstick with which to compare and combine the different indicator measures, it still is not completely satisfying for the purpose of presentation. This drawback is attributable to the fact that standardized outcomes can take on an infinite range of values that indicate only the direction and number of standard deviations of the difference between the given score and the mean score for the particular outcome. In contrast, the probability values associated with the standardized outcome scores represent a measure with more intuitive appeal. They range from 0 to 1, or, in this case, from 0 to 1000 with an average of 500. These values were derived directly from the Z-scores, using a cumulative standard normal distribution. For example a Z-score of 0 equals a probability of 50 percent or, here, an index score of 500. Conceptually, the result represents the percentile ranking of the Z-scores, and indicates the extent to which the state performed well or poorly relative to the other states included in the calculation of the index.

For example, using per capita income, the first step in this method is to calculate the mean and standard deviation across all the states for a particular year. In 2003, Kentucky's per capita income was $26,352. The mean and standard deviation across all 50 states for that year were $30,375 and $4,236, respectively. The Z-score was calculated as ($26,352-$30,375)/$4,236, which equals a value of –0.9. The probability value for this Z-score value is 0.171. This value was then multiplied by 1000 to obtain 171—Kentucky's per capita income index score for 2003 relative to the nation. The economy subindex score was then obtained by calculating the average of this score and the eight other indicators included in this quality-of-life area. Upon calculation of this score, the final index score was the average of each of the five subindex scores.

[4] For further information on how these states were selected please see <http://www.kltprc.net/stateofthecommonwealthappendix.htm>.

[5] The peer states include Alabama, Arkansas, Florida, Georgia, Illinois, Indiana, Louisiana, Michigan, Mississippi, Missouri, North Carolina, Ohio, South Carolina, Tennessee, Virginia, and West Virginia. Including Kentucky, the total number of states used in this part of the analysis is 17.

[6] Choosing a weighting scheme can be problematic in that any one chosen inherently makes assumptions about the relative importance of the indicators and imposes those assumptions on the final calculation. For example, weighting the indicators equally imposes the assumption that those areas with more indicators are more important than those with fewer. In this case, the results are comparable to those shown here. The current weighting system, while it does not avoid this inherent bias, draws upon the input of a multitude of people throughout the state, rather than a few.

[7] For further information on the index scores please see <http://www.kltprc.net/stateofthecommonwealthappendix.htm>.

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Broadband Access, Use Key to State's Future

By Mark Schirmer

Though the Internet has been used most commonly for e-mail correspondence, a process generally requiring little bandwidth, the Web has become an increasingly utilized means of delivering multimedia content, from music, animation, and television programs, to college courses, remote database management, and even medical treatment. The bandwidth required for accessing such data-rich material taxes—if not exceeds—the capacity of dial-up modems. Broadband technology, however, allows for data transfer rates much faster than dial-up modems, enabling access to the Internet's most robust content.

While often touted anecdotally for its convenience and capabilities, broadband's effects on communities have received coverage more qualitative than quantitative. But a recent study from the Massachusetts Institute of Technology highlights economic gains attained in communities with available broadband. The study's authors compare economic indicators in zip codes with available broadband and those without, spanning 1998 to 2002. Areas that offered high-speed Internet access by December 2003 outperformed the other communities, experiencing significant benefits in real estate values and job market growth. In communities with broadband, rental property rates rose 6 percent higher in 2000, the number of establishments and the proportion of IT-intensive establishments grew an additional 0.5 percent, and the employment rate received a 1 percent boost.[1] Though the results underscore the economic promise of high-speed Internet access, the promise will prove hollow if available broadband goes unused.

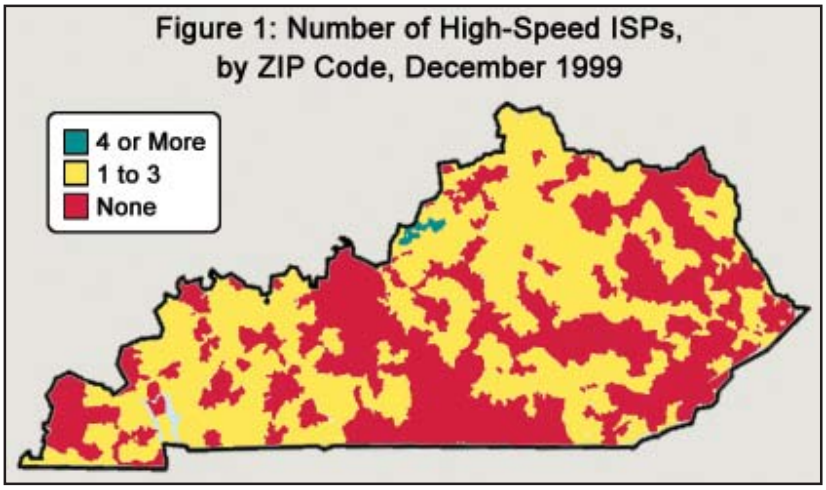

Figure 1: Number of High-Speed ISPs, by ZIP Code, December 1999

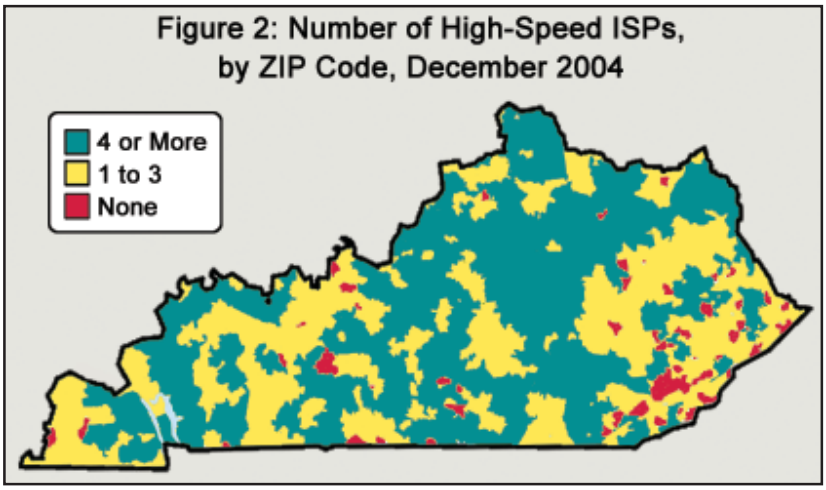

Figure 2: Number of High-Speed ISPs, by ZIP Code, December 2004

LaGrange, Georgia, represents a real-world example of broadband's potential to transform a region's economic outlook. Through a public-private partnership, the city installed two broadband networks during the 1990s and began offering free broadband to the entire community in 2000, earning it the Intelligent Community of the Year Award for 2000. The new infrastructure empowered LaGrange to attract IT companies, resuscitating a struggling economy that had long been dependent on the cotton market.[2] With the implosion of tobacco sales, LaGrange offers what could be a model for many of Kentucky's communities.

In recent years, Kentucky has made great strides in expanding the availability of broadband Internet (see Figures 1 and 2). In December 1999, roughly 79 percent of the state's population resided in zip codes where high-speed Internet access was available—though broadband was not necessarily available everywhere within these zip codes. Five years later, the proportion had grown to 98 percent of Kentuckians. But much like measures of income and educational attainment, the state showed a distinct urban-rural gap.

In December 1999, only 18 percent of Kentucky's rural zip codes had at least one broadband Internet Service Provider (ISP), far behind the state's metropolitan areas, 68 percent of which had at least some broadband coverage. Micropolitan areas and small towns also fell well below larger cities, but ahead of the rural regions.[3] By 2004, metropolitan and micropolitan zip codes were virtually tied—at 99 and 97 percent, respectively—as were small towns and rural areas—83 and 85 percent, respectively (see Figures 3 and 4). In the competitor states—which are listed in Figure 5—the percentages of metropolitan and micropolitan zip codes with at least one ISP were virtually identical to their Kentucky counterparts—99 and 96 percent, respectively. But small towns (94 percent) and rural communities (90 percent) fared far better.

Whereas Kentucky's coverage rose dramatically, broadband use remained in the cellar. According to the Census Bureau, only 12 percent of Kentucky households had broadband in 2003, at a time when 98 percent of the state resided in zip codes where it was available (see Figure 5). Indeed, Kentucky lagged behind both the nation and most competitor states in terms of at-home high-speed Internet access. More recently, a survey by the University of Kentucky's Gatton School of Business reported that 24 percent of adult Kentuckians have broadband at home. That same survey found that among Internet users in Kentucky with dial-up modems, the most common reasons for not switching to broadband concerned not its lack of availability, but rather its cost and an apathy to the technology.[4]

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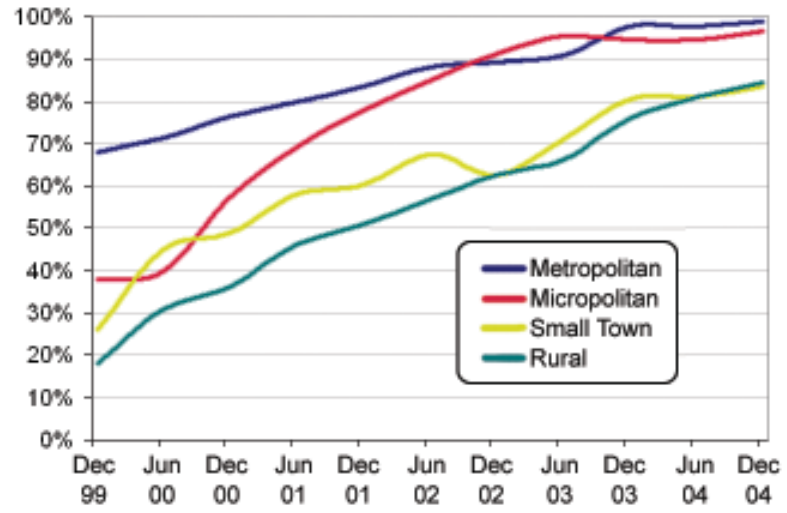
Figure 3: Percentage of Kentucky Zip Codes with at Least One High-Speeed ISP



An initiative led by ConnectKentucky is at work to bring broadband coverage *and* use to the entire Commonwealth by 2007. Though statewide, the campaign operates on a county-by-county basis, seeking solutions for providing broadband coverage, raising awareness of the technology, and driving up demand for its availability. Though Kentucky ranks 42nd in the nation in terms of home Internet use, ConnectKentucky's program stands as one of the nation's leading efforts to cultivate the implementation of broadband technology.

Bringing broadband to rural areas and small towns, however, often faces an uphill battle, sometimes quite literally. Telecommunications companies often balk at the cost of connecting small towns to their networks out of fear that utilization will be insufficient to provide a return on their investment. Mountainous terrain, which dominates Kentucky's eastern landscape, compounds the expense of connecting communities, making broadband access even more difficult to attain.

Kentucky's small towns need not wait for the large telecoms to come calling. Some, like LaGrange, are taking the initiative and building their own networks. In this respect, Glasgow, Kentucky, has proven to be one of the state's most innovative communities. The Glasgow Electric Plant Board serves not only the town's power and cable television needs, but also supplies its broadband, and remains a city-run entity. Not only can Glasgow enjoy the advantages of high-speed Internet access, it also reaps the benefits of owning its broadband infrastructure.

Though the spread of high-speed Internet availability remains crucial, policymakers must additionally work to expand the actual *use* of broadband, addressing both its cost and the need to inform the populace of its benefits. Political, civic, and business leaders must recognize that in the 21st century, broadband will become as essential to an area's economic well-being as traditional utilities. These leaders, in turn, must get involved in the process of both bringing high-speed Internet access to their areas and raising the public's awareness of how this technology can improve their lives and transform their communities. Only then can the true promise of broadband be fulfilled.

Figure 4: Percentage of Zip Codes with at Least One High-Speed ISP, All Competitor States

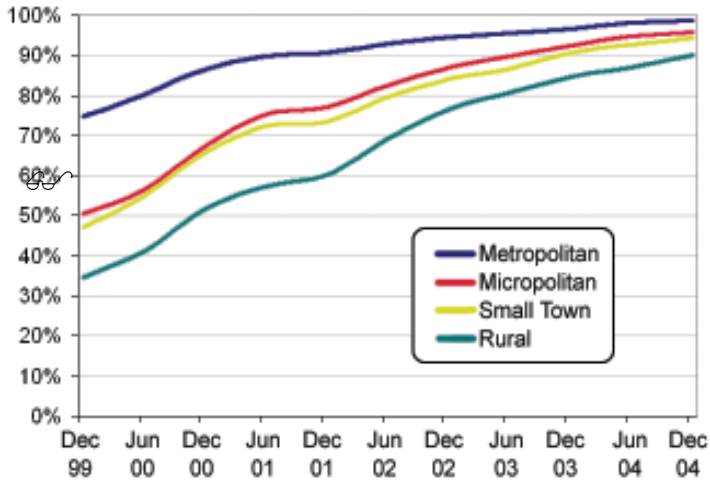
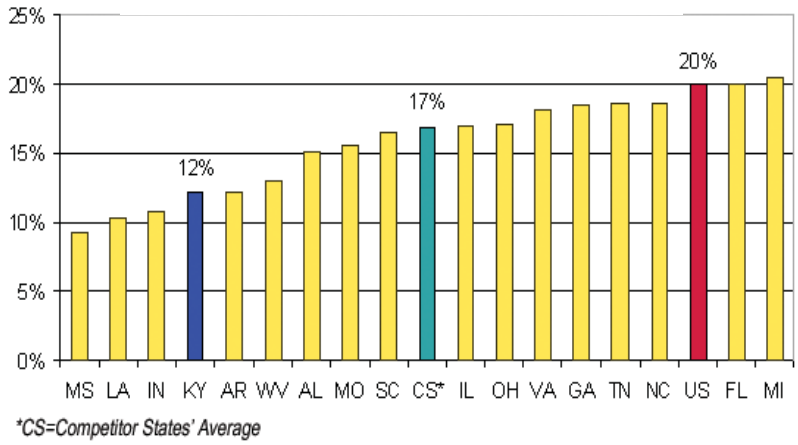


Figure 5: Percentage of Households with Broadband Internet, 2003



Notes

[1] William H. Lehr, Carlos A. Osorio, Sharon E. Gillett, and Marvin A. Sirbu, "Measuring Broadband's Economic Impact," Oct. 2005, Massachusetts Institute of Technology Program on Internet and Telecoms Coverage, 22 Nov. 2005 <http://itc.mit.edu/itel/docs/2005/MeasuringBB_EconImpact.pdf>.

[2] Greg Laudeman, "Usefulness: An Issue Lost in the Digital Divide," Rural TeleCon '05, Rural Telecommunications Congress, Lexington Convention Center, Lexington, Kentucky, 10 Oct. 2005.

[3] The 2000 standards of the United States Office of Management and Budget define metropolitan as an area containing a core population of at least 50,000 people; micropolitan areas contain more than 10,000 but fewer than 50,000 residents.

[4] Terry L. Childers, "The Fifth Annual UKeComm© Tracking Study," 2005, Von Allmen Center for Electronic Commerce, University of Kentucky, 25 Nov. 2005 <http://www.ukecomm.org/Downloads/UKecomm_2005_Survey.ppt>.

The Role of Medicaid in State Economies: A Look at the Research

Medicaid is the nation's major public health program for low-income Americans, financing health and long-term care services for more than 50 million people—a source of health insurance for low-income children and parents and a critical source of acute and long-term care coverage for elderly and disabled individuals, including millions of low-income Medicare beneficiaries. In addition, the program supports tens of thousands of health care providers throughout the country, including hospitals, nursing facilities, group homes and community health centers, as well as managed care plans. The program's financing structure—the federal matching arrangement—and the magnitude of Medicaid spending enable the program to make significant contributions to state economies in terms of jobs, income and overall economic activity. As state policymakers grapple with closing budget shortfalls, many look to Medicaid for savings, as it is a major component of state budgets. However, it is argued that cutting Medicaid not only adversely affects the beneficiaries and providers, but also may have an impact on the larger state economy.

The Kaiser Commission on Medicaid and the Uninsured has compiled the findings from 17 studies analyzing the role Medicaid plays in state and local economies. These studies estimate the economic stimulus derived from Medicaid spending, and also analyze the adverse effects on the state economy from reducing Medicaid spending. This policy brief provides an overview of Medicaid financing, explains the methods used to assess economic impact and summarizes the main findings from the research.

Overview of Medicaid Financing

Authorized by Title XIX of the Social Security Act, Medicaid is a means-tested entitlement program jointly financed by the federal and state governments. According to Congressional Budget Office estimates, the federal government spent $161 billion on Medicaid in fiscal year (FY) 2003.[1] In addition, the states are estimated to have spent $121 billion, bringing total program spending to $282 billion.[2] Medicaid is the second largest line item in state budgets—16 percent of state funds are allocated to Medicaid on average—and is the largest source of federal grant support for the states.[3]

The federal government matches each state's Medicaid spending at an established rate that varies by state. The rate, the Federal Medical Assistance Percentage (FMAP), is determined by a set formula and tries to account for variation in incomes across the states. All states receive at least a 50 percent match and states with per capita incomes below the national average receive higher matching percentages. On average across all states, the federal government matches 57 percent of what states spend on Medicaid. The economic downturn has precipitated a significant decline in state revenues, leaving states with budget shortfalls in the tens of billions. In legislation enacted in May 2003, Congress temporarily increased the matching rates for FY 2004 by nearly 3 percent as part of a package providing states with fiscal relief. However, the fiscal relief will expire at the end of June 2004 (see Table 1 for FY 2004 and FY 2005 FMAP by state).

Economic Impact Modeling

To assess economic impact, most studies utilized either the *RIMS II* (Regional Input-output Modeling System) or *IMPLAN* (Impact Analysis for Planning) input-output models, which are widely used for assessing economic impact resulting from an event or major capital input such as a military base closing or airport construction. Input-output economic models account for the relationships between industries in an economy and allow for estimating the effects of changes in expenditures on state industries and the economy as a whole. Both models are based on similar theory—a change in input (e.g., a cut or increase in Medicaid expenditures) will produce *direct* impacts that will then "ripple" through other sectors of the economy producing *indirect* and *induced* impacts.

Editor's Note

This April 2004 Kaiser Commission on Medicaid and the Uninsured report examines the multiplier effects of state Medicaid spending and federal matching dollars as they apply to a state's economy. It summarizes 17 similar state-level studies that estimate the quantity of health care jobs, business activity, income, and tax revenue this state and federal spending generates.

In 2001 Kentucky's Legislative Research Commission (LRC) conducted its own analysis of the $2.2 billion in federal Medicaid matching dollars Kentucky received during Fiscal Year 2000. LRC economists found that these federal dollars resulted in $2.6 billion in output or sales beyond the original federal outlay for all Kentucky firms, employment of 68,000 people or the creation of 90,000 jobs, and about $2 billion in state personal income. In turn, about $50 million in sales and $80 million in personal income taxes were generated. Since 2000, state spending for Medicaid has risen by about half a billion dollars, as health care costs have soared and the number of eligible recipients has risen. In turn, federal Medicaid matching dollars have increased by over $1 billion. The economic consequence of this infusion of federal dollars has likely expanded as well.

Medicaid has a tremendous positive impact in local Kentucky communities, in their ability to sustain rural hospitals and recruit physicians. It is critical to Kentucky's ability to sustain the current level of health services. As this Kaiser Commission report details, Medicaid spending supports the health care industry where that spending occurs.

This Kaiser report, however, focuses exclusively on the multiplier effects of Medicaid spending. Evaluating the full impact of such spending on Kentucky's economy would require consideration of opportunity costs such as forgone consumer spending and investment or the economic impact of spending in other sectors. As LRC economists noted in 2001, at some point forgone services and improvements in other sectors, such as education, become more valuable than the economic impact of federal Medicaid matching dollars that require state investment in the program.

The indirect economic activity generated by any state spending may have its greatest impact with Medicaid because Kentucky receives a disproportionate federal match. However, the federal government requires discipline in state Medicaid programs and caps the expansion of state spending for the program. Kentucky's Medicaid program can expand beyond these limits, but, without the federal match, greater spending would not automatically yield the same results of current spending.

Quantifying the ability of Medicaid spending to multiply in Kentucky's economy is important, but perhaps the most important effect of Medicaid is that, by helping keep people healthy, it provides opportunity. While the Kaiser report does not investigate it, Medicaid affects a local economy by promoting better health, which in turn can lead to a more productive workforce. Good health, for example, is important to students' ability to participate in their education and learn. These multiplier effects are long-term, and perhaps the most significant.

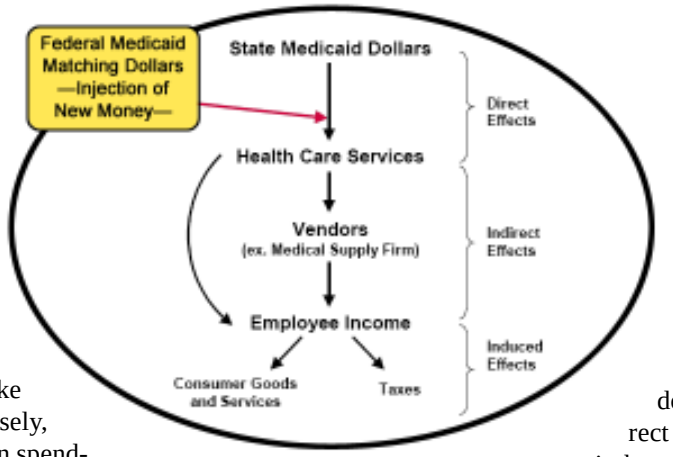
This process does not continue endlessly as with each round of spending, a portion of dollars is used for purchases made outside the state, or is taxed or saved.

The *RIMS II* model was developed by the U.S. Department of Commerce, Bureau of Economic Analysis and the *IMPLAN* model was originally developed by the U.S. Department of Agriculture Forest Service and then extended by the Minnesota IMPLAN Group, Inc. As discussed above, the models are based on similar economic theory; however, there are inherent differences in the models, primarily related to the types of multipliers each model uses and the approach used to compute multipliers. Both models make several assumptions in order to quantify impact; the assumptions and limitations of input-output economic modeling are included within the studies as appropriate.

Economic Impact Measures and the Multiplier Effect

Economic impact can be defined as the net change in the economy resulting from an event such as an increase or decrease in government spending. New spending can create a larger impact than the amount of new spending alone through "multiplier effects" because of the successive rounds of spending that occur when money is injected into a state economy. For instance, state businesses and residents spend their earnings on purchases from other businesses or residents in the state, who in turn make other purchases and so on.[4] Conversely, multipliers can work in reverse when spending is reduced. Economic impact is generally quantified in terms of employment, income, state revenue and overall economic output (also referred to as business activity, gross state product or value added).

Figure 1: Flow of Medicaid Dollars Through a State Economy: An Example



Both state and federal Medicaid spending have a multiplier effect. State spending alone yields multiplier effects as money is injected into the state's economy and used to conduct business, make purchases and support salaries. However, because of the matching arrangement, the economic impact of Medicaid spending is intensified by the infusion of new dollars from the federal government that would otherwise not exist in the state—a dollar of state Medicaid spending attracts at least one federal dollar. Thus, the total impact multiplier, relative to the multiplier of the state dollar alone, is considerably larger. Not including the temporary federal fiscal relief, the FMAP ranges from 50 to 77 percent among states—meaning that for every dollar a state spends on Medicaid, the federal government contributes at least one dollar and up to roughly three and one half dollars. The higher the matching rate, the stronger the financial incentive for states. For example, if a state's matching rate is set at 70 percent, for each $1 the state spends on Medicaid, the federal government contributes $2.33. Conversely, for every $1 that the state cuts in Medicaid spending, it will forgo the $2.33 match from the federal government. Therefore, the state is actually reducing its Medicaid spending by $3.33 to save $1 in state funds.[5]

State-only funded health programs and state spending in other areas may have economic multipliers roughly in the same range as Medicaid; however, these programs may not generate the added impact, as they typically do not attract federal matching funds. It is important to note that there are state programs that receive federal support, though not matching funds, and that there are other state programs, such as highway construction, that do attract federal matching funds.

Figure 1 presents an example of how Medicaid spending flows through an economy and demonstrates how the relationships within an economy can generate impacts greater than the original spending alone. First, while Medicaid payments are made on behalf of enrollees, the direct recipients are providers, including hospitals, private physicians and nursing homes, or managed care organizations. Therefore, Medicaid funding *directly* impacts health care service providers, supporting the jobs, income, and purchases associated with carrying out health care services.

Through the multiplier effect, other businesses and industries are *indirectly* affected due to the direct impact. For example, a medical supply firm may be affected through its business dealings with Medicaid providers — fluctuations in Medicaid funding may affect a Medicaid provider's supply order which then may affect the medical supplier's purchases from its vendors, and so on. Lastly, both the direct and indirect effects *induce* changes in household consumption and tax collection primarily due to household income fluctuations. Employees of Medicaid health care providers that are directly impacted or the employees of businesses that are indirectly impacted may change their spending patterns according to increases or decreases in income—the change in income triggers the household to increase or decrease spending on consumer goods. Due to changes in personal income and, subsequently spending, sources of government revenue—including income and sales taxes—would be affected as well.

Key Study Findings

After reviewing the 17 studies, several key findings emerge. The specific findings from each study are included in the Appendix.

Medicaid spending generates economic activity, including jobs, income and state tax revenues, at the state level.

- Medicaid is the second largest line item in state budgets.
- Money injected into a state from outside the state is critical to generating economic activity. Medicaid's economic impact is intensified because of the federal match—state spending pulls federal dollars into the economy.
- Medicaid is the largest source of federal funds for states. The amount of federal dollars each state receives depends on the state's Medicaid spending and their FMAP.

- Federal Medicaid matching dollars support jobs and generate income within the health care sector and throughout other sectors of the economy due to the multiplier effect.

The economic impact of Medicaid spending varies from state to state.

- Regardless of the economic impact model used, all studies have similar findings—Medicaid spending has a positive impact on state economies.
- The magnitude of the impact is dependent on state Medicaid spending, a state's matching rate from the federal government (FMAP) and the economic multipliers used in the studies, which reflect economic conditions within the state.
- The size of the health sector and the interdependence of industry sectors within a state and its regions can modify the impact.
- States and state regions and/or counties that are more reliant on public services and the health care industry may be disproportionately affected.

Reductions in state and federal Medicaid will lead to declines in economic activity at the state level.

- Reductions in state spending automatically reduce the infusion of federal dollars. States lose at least one dollar in federal funds for every dollar of state Medicaid spending cut.
- Decreases in funding reduce the flow of dollars to hospitals, nursing homes, home health agencies and pharmacies, and reduce the amount of money circulating through the economy, affecting employment, income, state tax revenue and economic output.

All of the studies examined provide evidence that Medicaid spending has a positive impact on state economies. It is clear from the studies conducted thus far that in addition to providing valuable health coverage for low-income people, state Medicaid spending also yields significant economic benefits for states, and that, largely as a result of Medicaid's unique matching arrangements, these benefits may be larger than state spending alone. As states address their budget shortfalls, spending decisions will hinge on a variety of factors. However, it will be important to consider the role of Medicaid in state economies and its economic impact relative to state spending in other areas.

Notes

[1] Congressional Budget Office, Fact Sheet for March 2004 Baseline–Medicaid and the State Children's Health Insurance Program.

[2] KCMU estimates based on Congressional Budget Office March 2004 Baseline and General Accounting Office report to the Committee on Finance, U.S. Senate, *Medicaid: Improved Federal Oversight of State Financing Schemes Is Needed*, February 2004.

[3] V. Wachino, A. Schneider and D. Rousseau, Financing the Medicaid Program: The Many Roles of Federal and State Matching Funds, KCMU policy brief, January 2004, available at <http://www.kff.org/medicaid/7000.cfm>.

[4] Within the health care sector, spending is largely internal to the state as health care is a service-based industry in which the product is generally consumed locally.

[5] V. Wachino et al., January 2004.

This issue brief was prepared by Alicia Carbaugh of the Kaiser Commission on Medicaid and the Uninsured with assistance from Barbara Lyons, Julie Hudman and Victoria Wachino of the Commission staff. KCMU would like to acknowledge the comments provided by Leighton Ku of the Center on Budget and Policy Priorities, Andy Schneider of Medicaid Policy, LLC, and Alan Weil of the Urban Institute.

TABLE 1
Federal Medical Assistance Percentages (FMAP), FY 2004 and FY 2005, and Federal Matching Funds Provided for Each Dollar of State Medicaid Spending, FY 2004

State	FY 2004 FMAP	Federal Funds for Each 2004 State Dollar	FY 2005 FMAP
Alabama	73.7%	$2.80	70.8%
Alaska	61.3%	$1.59	57.6%
Arizona	70.2%	$2.36	67.5%
Arkansas	77.6%	$3.47	74.8%
California	53.0%	$1.13	50.0%
Colorado	53.0%	$1.13	50.0%
Connecticut	53.0%	$1.13	50.0%
Delaware	53.0%	$1.13	50.4%
District of Columbia	73.0%	$2.70	70.0%
Florida	61.9%	$1.62	58.9%
Georgia	62.6%	$1.67	60.4%
Hawaii	61.9%	$1.62	58.5%
Idaho	73.9%	$2.83	70.6%
Illinois	53.0%	$1.13	50.0%
Indiana	65.3%	$1.88	62.8%
Iowa	66.9%	$2.02	63.6%
Kansas	63.8%	$1.76	61.0%
Kentucky	73.0%	$2.71	69.6%
Louisiana	74.6%	$2.93	71.0%
Maine	69.2%	$2.24	64.9%
Maryland	53.0%	$1.13	50.0%
Massachusetts	53.0%	$1.13	50.0%
Michigan	58.8%	$1.43	56.7%
Minnesota	53.0%	$1.13	50.0%
Mississippi	80.0%	$4.01	77.1%
Missouri	64.4%	$1.81	61.2%
Montana	75.9%	$3.15	71.9%
Nebraska	62.8%	$1.69	59.6%
Nevada	57.9%	$1.37	55.9%
New Hampshire	53.0%	$1.13	50.0%
New Jersey	53.0%	$1.13	50.0%
New Mexico	77.8%	$3.50	74.3%
New York	53.0%	$1.13	50.0%
North Carolina	65.8%	$1.92	63.6%
North Dakota	71.3%	$2.49	67.5%
Ohio	62.2%	$1.64	59.7%
Oklahoma	73.5%	$2.78	70.2%
Oregon	63.8%	$1.76	61.1%
Pennsylvania	57.7%	$1.36	53.5%
Rhode Island	59.0%	$1.44	55.4%
South Carolina	72.8%	$2.68	69.9%
South Dakota	68.6%	$2.19	66.0%
Tennessee	67.5%	$2.08	64.8%
Texas	63.2%	$1.72	60.9%
Utah	74.7%	$2.95	72.1%
Vermont	65.4%	$1.89	60.1%
Virginia	53.5%	$1.15	50.5%
Washington	53.0%	$1.13	50.0%
West Virginia	78.1%	$3.57	74.7%
Wisconsin	61.4%	$1.59	58.3%
Wyoming	64.3%	$1.80	57.9%

Sources: <http://aspe.hhs.gov/search/health/fmap.htm>; Kaiser Commission on Medicaid and the Uninsured estimates based on FY 2004 FMAP as published at <http://aspe.hhs.gov/search/health/FMAPO3-04temporaryincrease.html>
Notes: FY2004 rates include 2.95% temporary increase in FMAP under Tax Equity Act that expires in June 2004. FY 2005 rates do not.

Overview of State Economic Impact Analyses

STATE and CITATION	FINDINGS
ALASKA G. Doeksen and C. St. Clair *The Economic Impact of the Medicaid Program on Alaska's Economy* March 2002 Oklahoma State University	Alaska's FY 2001 state expenditure of $150 million for Medicaid yielded: • $424.5 million federal match • Total employment impact: 9,002 jobs (includes those directly employed as a result of Medicaid expenditures and jobs created throughout other sectors of the economy as a result of the direct employment) • Total income impact: $346 million • Total economic output impact: $1.0 billion
ARIZONA Center for Business Research, L. William Seidman Research Institute, W.P. Carey School of Business, Arizona State University *Economic Impacts of Proposed Budget Cuts to Arizona's Health Care Safety Net* June 2, 2003	Proposed reductions in Arizona of $51 million in state funding would result in a reduction of $132 million in federal matching funds. Based on the findings of the impact of the five proposed changes to AHCCCS and KidsCare, a $1 million reduction in state funding would result in the following: • $5.1 million decrease in gross state product • $3.8 million decrease in labor income • 100 lost jobs • $440,000 decrease in state and local tax revenue
ARKANSAS W. Miller and J. Pickett *Economic & Fiscal Impact of Additional $100 Million in State Funding for Medicaid Programs* March 24, 2003 University of Arkansas, Division of Agriculture	Arkansas' additional spending of $100 million dollars will generate/contribute: • $300 million federal match • $633 million in economic activity (every $1 in state spending generates $6.33 in economic activity) • 10,268 jobs • $306 million in resident income • $395 million to the Gross State Product • $22.3 million in revenue for state and local government (sales and use taxes, personal income tax, other direct and indirect taxes and fees)
FLORIDA P. Sampath *Penny Wise & Pound Foolish: Why Cuts to Medicaid Hurt Florida's Economy* October 2003 Human Services Coalition of Dade County written for Community Health Action Information Network (CHAIN)	Florida's 2002 state expenditure of $4.1 billion resulted in the following: • $4.79 billion federal match • Employment impact: 120,950 jobs • Income impact: $4.3 billion • Business activity impact: $8.7 billion Medicaid cuts enacted in the 2003 legislative session of $49.5 million estimated to have resulted in the following: • $71.8 million lost federal match • 1,732 jobs impacted • $59 million in lost salaries and wages • $155 million in lost economic activity
IDAHO D. Warn *Medicaid: Someone You Know Needs It Medicaid Supports Idaho's County Economies* January 2004 Northwest Federation of Community Organizations and Idaho Community Action Network (economic impact analysis performed by Steven Peterson, Department of Agricultural Economics and Rural Sociology, University of Idaho)	State spending on Medicaid results in total business activity approximately five times larger than the state's original investment given that state dollars are matched and because the initial spending stimulates additional economic activity. State spending on Medicaid of $213.8 million resulted in the following: • $549.8 million federal match ($763,572,171 in total spending) • Total employment impact: 16,764 • Total income impact: $543 million • Total business activity: $1.0 billion
MISSISSIPPI B. Blair and M. Millea *Economic Impacts of Federal Medicaid Expenditures on the State of Mississippi in 2002* August 2003 Mississippi Health Policy Research Center, Mississippi State University	Mississippi's 2002 Medicaid expenditure of approximately $620 million resulted in the following: • $1.98 billion federal match • $2.69 billion in additional economic output • $1.39 billion of the state's GSP was attributable to federal Medicaid funding • 39,059 jobs supported by Medicaid inflow • $1.05 billion in personal income • Increase in personal income generated $60.7 million in tax revenue
MONTANA S. Seniger *Economic Impact of Medicaid on Montana and on the Billings, Butte, and Miles City Healthcare Market Areas* January 2, 2003 School of Business Administration, University of Montana-Missoula	Montana's 2002 state expenditure of $140 million for Medicaid spending resulted in the following: • $420 million federal match • Total employment impact: 13,469 (health care sector and other sectors) • Total income impact: $375 million

NORTH CAROLINA K. Kilpatrick, et al. *The Economic Impact of Proposed Reductions in Medicaid Spending in North Carolina* April 11, 2002 Institute for Public Health, School of Public Health, University of North Carolina, Chapel Hill	**High reduction** (-$408,309,631 federal + state) • Employment impact: 9,700 lost jobs • Economic output loss: $706,257,420 Federal reduction only under the high scenario (-$278,593,774) • Employment impact: 6,590 lost jobs • Economic output loss: $479,846,829 **Low reduction** (-$399,292,466 federal + state) • Employment impact: 9,500 lost jobs • Economic output loss: $690,432,383 Federal reduction only under the low scenario (- $272,467,295) • Employment impact: 6,454 lost jobs • Economic output loss: $469,094,951
OHIO R. Greenbaum and A. Desai *Uneven Burden: Economic Analysis of Medicaid Expenditure Changes in Ohio* School of Public Policy and Management, The Ohio State University April 2003	Ohio's FY 2001 state expenditure of $3.6 billion for Medicaid expenditures resulted in the following: • Employment impact: 132,028 jobs • Income impact: $4.1 billion • New business activity: $11.5 billion A reduction of $491 million in state Medicaid expenditures would result in the following: • Reduced economic activity: $1.5 billion over a two-year period • Employment impact: 16,500 jobs • Fiscal impact: $22 million in tax revenue (tax revenue figure includes only state income taxes and does not estimate the effect on sales and other taxes)
OKLAHOMA Oklahoma Health Care Authority and Oklahoma Department of Commerce *Medicaid and the Economy: Estimated Economic Impact* January 2001 (Revised January 2003)	Oklahoma's SFY 2002 state expenditure of $722 million for Medicaid resulted in the following: • $1.65 billion federal match • Total employment supported: 90,366 jobs • Total income supported: $1.98 billion • Total fiscal impact: $76.5 million in state income and consumption taxes
SOUTH CAROLINA Division of Research, Moore School of Business, University of South Carolina *Economic Impact of Medicaid on South Carolina* January 2002	South Carolina's 2001 state expenditure for Medicaid resulted in the following: • $2.1 billion federal matching funds • Support of more than 61,000 jobs • Generation of $1.5 billion in income for state citizens
TEXAS The Perryman Group Medicaid and the Children's Health Insurance Program (CHIP): An Assessment of Their Impact on Business Activity and the Consequences of Potential Funding Reductions April 2003	Using current Medicaid expenditures, the composite impacts include: • $56.174 billion in annual total expenditures • $29.511 billion in annual Gross State Product • $20.444 billion in annual personal income • $7.694 billion in annual retail sales • 474,420 permanent jobs • $1.458 billion in annual state revenue Using federal funding segment only, impacts include: • $33.670 billion in annual total expenditures • $17.689 billion in annual Gross State Product • $12.254 billion in annual personal income • $4.611 billion in annual retail sales • 284,368 permanent jobs • $0.874 billion in annual state revenue
UTAH J. Crispin-Little *Economic Impact of MEDICAID and CHIP on the Utah Economy* January 2003 Bureau of Economic and Business Research, David Eccles School of Business, University of Utah	Utah's 2001 state expenditure of $264.7 million for Medicaid and $4.7 million in CHIP resulted in the following: • $600,364,379 Medicaid federal match; $18,880,000 CHIP match • Employment impact (Medicaid): 16,818 jobs • Employment impact (CHIP): 560 jobs • Income impact (Medicaid): $437,413,719 • Income impact (CHIP): $16,146,176 • Fiscal impact (Medicaid): $47,371,906 • Fiscal impact (CHIP): $1,748,631 Every $1,000,000 in state spending resulted in the following: • $2,270,000 Medicaid federal match; $4,000,000 CHIP match • 64 jobs (Medicaid) • 120 jobs (CHIP) • $1,664,576 in income (Medicaid) • $3,459,900 in income (CHIP) • $120,349 in tax revenue (Medicaid) • $250,151 in tax revenue (CHIP)
VIRGINIA Fiscal Analytics, Ltd. *The Impact of Additional Medicaid Spending in Virginia* June 2003	A $250 million increase in state Medicaid spending would result in the following: • Support of 10,000 to 15,000 jobs RIMS II calculations (using Virginia-specific multiplier of 2.5 from *Medicaid: Good Medicine for State Economies*, Families USA): • $250 million federal match • $626 million in new business activity IMPLAN calculations (using multiplier of 1.7): • $250 million federal match • $426 million in new business activity

WEST VIRGINIA Christiadi and T. Witt *Economic Impact of Medicaid Federal-Match on the West Virginia Economy FY 2002* January 2003 Bureau of Business and Economic Research, College of Business and Economics, West Virginia University	West Virginia's FY 2002 state expenditure of $371 million for Medicaid resulted in the following: • $1.133 billion federal match • Total employment impact: 32,685 jobs • Total income impact: $667.3 in employee compensation • Total business volume impact: $1.881 billion • Generated $955.2 million of value added
WISCONSIN S. Dellar, L. Hall, J. Peacock *Economic Impact of Reducing Medicaid and BadgerCare Expenditures* *February 2003* University of Wisconsin, Madison and Wisconsin Council on Children and Families	The analysis indicates that a 10 percent cut would result in the following: • $367 million per year reduction in total expenditures ($148 million in state funds, $218 million in federal matching funds) • Total loss of 9,100 jobs with an accompanying loss of $394 million in income (direct loss of 5,700 jobs and $240 million in lost income) • Lost economic activity would result in a $30 million decline in state and local government revenue (due to lower income, sales and other taxes)
FAMILIES USA (National Study) *Medicaid: Good Medicine for State Economies* January 2003 [State-by-state data available within the study]	Business Activity • In FY 2001, states spent nearly $97.7 billion on Medicaid, generating an almost three-fold return in state economic benefit–$279.3 billion in increased state-level output of goods and services from increased business activity • In FY 2001, the rate of return per dollar invested in Medicaid ranged from a low of $1.95 to $6.34 among states • In FY 2001, the average value of increased business activity generated from state Medicaid spending was nearly $6 billion per state • In FY 2003, every $1 million of state Medicaid spending results in $3.4 million in new state business activity on average ($1 million spending reduction results in a loss of business activity) Jobs and Wages • In FY 2001, total state Medicaid spending generated almost 3 million jobs and over $100 billion in wages via employment in the health sector and other sectors • On average, wages increased by $2 billion per state • For FY 2003, on average, $1 million in state spending generated 37 jobs and $1.2 million in wages ($1 million reduction in spending results in the loss of jobs and wages)

SOURCE: Research compiled for the Kaiser Commission on Medicaid and the Uninsured, 2003-2004.

For additional information on input-output models, IMPLAN or RIMS II, refer to the individual studies or visit: <http://www.implan.com> or <http://www.bea.gov/bea/regional/rims/>.

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